



Department of Commerce

Safety & Buildings Division

201 West Washington Avenue

P.O. Box 2658

Madison, WI 53701-2658

Evaluation # 200324-H

Wisconsin Building Products Evaluation

Material

Waste Oil-Fired Hot Water Boiler

Manufacturers

Reznor, A Unit of Thomas & Betts
150 McKinley Avenue
Mercer, PA 16137

SCOPE OF EVALUATION

GENERAL: This report evaluates RAB Models 140, 235, 350 and 500 combustion-type waste oil-fired hot water boilers. The RAB Models 140, 235, 350 and 500 combustion-type waste oil-fired hot water boilers manufactured by Reznor, A Unit of Thomas & Betts.

This review includes the cited **International Building Code (IBC)** requirements below in accordance with the current **Wisconsin Amended IBC Code:**

The RAB Models 140, 235, 350 and 500 combustion-type waste oil-fired hot water boilers were evaluated for use as waste oil burning appliances in accordance with the separation requirements of **s. IBC 302.1.1.1**.

This review includes the cited **International Mechanical Code (IMC)** requirements below in accordance with the current **Wisconsin Amended IMC Code:**

The RAB Models 140, 235, 350 and 500 combustion-type waste oil-fired hot water boilers were evaluated for use as waste oil burning appliances in accordance with **ss. Comm 64.0001, 64.0002, 64.0102, 301.3, 301.4(a), 301.5, 303.1, 304.1, 910.1, 917.1, 918.1, and 920.1**.

The RAB Models 140, 235, 350 and 500 combustion-type waste oil-fired hot water boilers were evaluated for use as waste oil burning appliances in accordance with the current **Wisconsin Flammable and Combustible Liquids Code, Chapter Comm 10**.

Reznor Model OT-250 oil supply storage tank was evaluated in accordance with the current **Wisconsin Flammable and Combustible Liquids Code, Chapter Comm 10**.

SBD-5863 (R. 10/00)

Class II fuel oil tanks (No. 2 fuel oil or other combustible fuels) and used crankcase oil tanks shall comply with **Chapter Comm 10** in accordance with the **(IMC) as Modified by Chapter Comm 64**.

DESCRIPTION AND USE

The RAB Models 140, 235, 350 and 500 combustion-type waste oil-fired hot water boilers (140,000, 235,000, 350,000 and 500,000 Btuh input respectively) used to burn waste oil and No. 2 fuel oils. The used oil must be no heavier than 50 weight and not lighter than No. 2 fuel oil.

The RAB Models 140, 235, 350 and 500 combustion-type waste oil-fired hot water boilers include the same style burner, oil preheater, and positive displacement pump. The atomizing burner mounted on the boiler door provides flame retention. Air for atomization of the oil is, provided by an onboard piston-type compressor mounted on a shelf on the side of the boiler. An oil preheating system (U.S. Patent No. 5,080,579) heats the oil, maintaining it at a temperature required for atomization but preventing nozzle after-drip. The burner has electric spark ignition and an electronic cad-cell flame safety system with manual reset.

The remote fuel pump mounted on or near the oil supply tank is part of a positive pressure supply system providing a precisely metered flow of oil to the burner. This positive displacement pump produces a stable flame under a wide range of operating parameters. The supply tank must be closer than 5 feet and no farther than 50 feet from the boiler. A fuel line filter with a cleanable strainer, a vacuum gauge, and a foot valve are provided for installation in the field-supplied suction line that runs from the supply tank to the fuel pump.

The RAB Models 140, 235, 350 and 500 combustion-type waste oil-fired hot water boilers are made of GL-180M silicone injected, gray cast iron. The double wall sectional construction allows for a high efficiency three pass heat exchanger. Flue ways are sealed gas-tight with tongue and groove designed sections and elastic high temperature sealing rope.

TESTS AND RESULTS

The RAB Models 140, 235, 350 and 500 combustion-type waste oil-fired hot water boilers were tested in accordance with UL 731 Standard for Oil-Fired Unit Heaters, and the Standard for Oil Burners, UL 296, and they are listed by Underwriter's Laboratories, Inc., and/or CSA certified. The models above were also tested in accordance with CSA International Standard B140.4, Oil-Fired Warm Air Furnace, and FBL Notice No. 72, "Requirements for Appliances Burning Used Oil in an Atomizing Burner", and are certified. All models meet EPA requirements for disposal of used oil.

The tank is constructed in accordance with the current edition of the Standard of Underwriter's Laboratories, Inc., for Steel Aboveground Tanks for Flammable and Combustible Liquids for indoor use with flammable liquids.

LIMITATIONS OF APPROVAL

Because garages and aircraft hanger buildings are classified as a high hazard use under **IBC Chapter 3**, waste oil tanks are not required to be placed in rated enclosures within those occupancies.

In accordance with their listings, the RAB Models 140, 235, 350 and 500 combustion-type waste oil-fired hot water boiler models including the waste oil tank can be installed as individual units with other code complying tanks or heating equipment, as long as the applicable portions of this approval are observed.

The RAB Models 140, 235, 350 and 500 combustion-type waste oil-fired hot water boilers are approved as heating appliances that meet standards recognized by the department, and are listed by an agency recognized by the department in accordance with **(IMC) as Modified by Chapter Comm 64**.

The RAB Models 140, 235, 350 and 500 combustion-type waste oil-fired hot water boilers installed in a storage garage, repair garage and factory occupancies shall be installed as required per **s. IBC 303, Table 302.1.1, and s. IBC 1007.1**. The RAB Models 140, 235, 350 and 500 combustion-type waste oil-fired hot water boilers installed in garages

shall be suspended at least 8 feet off the main floor and be visible from the main floor in accordance with **s. IBC 406.6.5, Exception 1**.

The RAB Models 140, 235, 350 and 500 combustion-type waste oil-fired hot water boilers shall be installed in aircraft hangers as allowed in **s. IBC 412.2.4**.

In occupancies where waste oil equipment is allowed, the equipment protection from damage shall be in accordance with **s. IMC 303.4**.

Class II fuel oil tanks (No. 2 fuel oil or other combustible fuels) and used crankcase oil tanks shall comply with **Chapter Comm 10** in accordance with the **(IMC) as Modified by Chapter Comm 64**.

The tank shall be installed indoors in accordance with **s. Comm 10.335(2)**, no more than 36 inches above the floor. The tank shall be provided with a 2-inch I.D. normal vent and with a 4-inch I.D. emergency vent. Both vents shall terminate outside the building in accordance with NFPA 30.

The fill opening for the tank may terminate outside the building in accordance with section 2-4 of NFPA 30 or inside the building in accordance with section 5-4 of NFPA 30. If the fill terminates inside the building, it must be closed with a vapor tight cap or be part of a closed system. The fill pipe shall be closed after the filling activity is completed.

As is required for all types of heating equipment and fuel tanks, plans shall be submitted to the department for review in accordance with **s. Comm 61.30**.

The RAB Models 140, 235, 350 and 500 combustion-type waste oil-fired hot water boilers shall be installed, vented, and used in accordance with their listing, the manufacture's recommendations and this evaluation.

This approval will be valid through December 31, 2008, unless manufacturing modifications are made to the product or a re-examination is deemed necessary by the department. The product approval is applicable to projects approved under the current edition of the applicable codes. This approval may be void for project approvals made under future applicable editions. The Wisconsin Building Product Evaluation number must be provided when plans that include this product are submitted for review.

DISCLAIMER

The department is in no way endorsing or advertising this product. This approval addresses only the specified applications for the product and does not waive any code requirement not specified in this document.

Revision Date:

Approval Date: October 23, 2003 By: _____

Lee E. Finley, Jr.
Product & Material Review
Integrated Services Bureau